AWARDS 2024

Celebrating

25 Years of Research, Innovation, Impact and Partnerships

22 August 2024
Rustenburg, North West

science & innovation
Department:
Science and Innovation
REPUBLIC OF SOUTH AFRICA

NRF National Research Foundation 25

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Message from the NRF CEO

Dr Fulufhelo Nelwamondo, PhD

This year marks the 25th anniversary of the National Research Foundation. This milestone brings with it, an admirable track record of achievement and success in support of South Africa's national science system. For a quarter of a century, the organisation has been busy pursuing its mandate to transform the country's research landscape to one that is equitable and fair in terms of race, gender and disability as well as excellence in the research and knowledge production it undertakes for the benefit of society. This has been no easy task due to South Africa's historical social and economic imbalances. It has not been an easy road that we have travelled, but we have overcome many challenges to ensure that society reaps the benefits of excellent research.

There are currently 4 212 NRF-rated researchers. Black South African rated researchers account for 38% of that number, while women account for almost 37%. This year, of the 190 who have received their first NRF rating, more than 51% are Black South Africans and 38% are women. I can confidently say that, while there is still a way to go, the NRF is successfully transforming our cohort to better reflect the country's demographics while at the same time maintaining high standards of research across the spectrum of scientific investigation.

Research, innovation and impact remain the hallmarks of South Africa's research landscape, driven by the NRF's mandate and agenda. One important aspect of our mission, and which is part of this year's NRF Awards theme, is partnerships. The NRF's success is based on the partnerships it has developed with universities, as well as local, regional and international science councils and organisations. Without these collaborations, we would not have been able to build the cohort of trained scientists we have today. In addition, the partnerships we have created with those to whom we provide support and funding – the postgraduate students, Fellows and researchers – are just as critical to our success, not only due to the positive impact that their work continues to have on society but also due to their efforts to develop the next generation of researchers who will continue to build our economy into a global knowledge powerhouse.

The NRF Awards recognise the excellent contributions made by the shining stars of our country's scientific cohort – researchers and institutions who have committed themselves to exploring the frontiers of our knowledge to create a better and a more sustainable future for all members of our society. The NRF Awards also embody the NRF's overall mandate for the support and advancement of research and human capacity; our development of the country's National Research Facilities; the fostering of public awareness and engagement with science; and our commitment to the promotion of the national science system for national development.

We salute all the recipients of this year's awards. Thank you for your commitment to excellence, innovation and impact and for partnering with us on this journey towards a bright and sustainable future.

About the NRF Awards

Research Excellence Award for Next Generation Researchers

The NRF provides funding to postgraduate students in order to address the skills shortages in the fields of science, engineering, technology, humanities and social sciences by increasing the possibility of retaining suitably qualified young scientists, thereby increasing the pool of researchers and knowledge workers in the National System of Innovation.

This award recognises outstanding academic performance by final-year doctoral students.

Research Excellence Award for Early Career/Emerging Researchers

The NRF aspires to develop and enhance the research stature of Early Career/ Emerging Researchers, prioritising black, female and people with disabilities as part of its transformation agenda which, among others, aims to redress historical imbalances in the South African researcher cohort.

This award recognises outstanding research performance by current Early Career/Emerging Researchers in any discipline, who are NRF grant holders.

Focussed Research Advancement Award

This award recognizes a University of Technology and a Historically Disadvantaged University that has shown most growth in research productivity. The evaluation covers a period of 5 years.

P-Rated Researchers

A “P” rating is assigned to researchers (normally under 35 years of age) who have held a doctorate or equivalent qualification for less than five years at the time of application.

These researchers are considered likely to become future international leaders in their respective fields, on the basis of exceptional potential demonstrated in research performance and output during doctoral and/or early post-doctoral careers.

Public Engagement with Research Award

The Public Engagement with Research Award recognises outstanding contributions to public engagement with science and encourages academics to make their work, and science and technology in general, more accessible to the public.

Champion of Research Capacity Development and Transformation at South African Higher Education Institutions

This category recognises individuals within the research community who contribute to the transformation, and thus diversity, of South Africa’s science cohort through the research students they supervise.

Societal Impact Award

In recognition of research with impact that has resulted in improvement in the quality of people’s lives.

Science Team Award

In recognition of the contributions, creativity and achievements of a science team towards extending the boundaries of scientific research in Africa, producing science outcomes which have positively impacted society and for the role they played in raising South Africa’s international stature as a world-class research destination.

A-Rated Researchers

A-rated researchers are unequivocally recognised by their peers as leading international scholars in their respective fields, for the high quality and impact of recent research outputs. They play a significant role in developing the next generation of researchers.

Acquiring an NRF A rating generates considerable acknowledgement and respect for the individual researchers as well as their institutions.

Lifetime Achievement Award

This accolade is awarded to individuals considered to have made extraordinary contributions, of international standard and impact, to the development of science in and for South Africa over an extended period of time, and for the manner in which their work has touched and shaped the lives and views of many South Africans.

To see the complete list of all Rated Researchers during the 2024 Rating Cycle please visit https://www.nrf.ac.za/rrd2024

Research Excellence Award for Next Generation Researchers

Life Sciences
Ms Anthea David
Department of Microbiology
University of KwaZulu-Natal

Ms Anthea David's pioneering work in biorefinery processes has provided novel innovation in sustainable bio-product generation from waste-based raw materials, offering viable solutions to global challenges related to resource scarcity, waste management, and climate change mitigation.

Lactic acid (LA) has been used as a precursor in various industrial streams to generate multiple intermediate and commodity chemicals. Therefore, its increasing demands, coupled with economic and environmental development, have stimulated the need for renewable and sustainable production of LA. Through her research endeavours, Ms David is poised to make significant contributions that will advance the understanding and application of eco-friendly bioprocessing techniques, thereby shaping the future of LA production and promoting sustainable practices in the biotechnology industry.

She completed her undergraduate (Microbiology & Biochemistry), Honours and Master's studies at the University of KwaZulu-Natal where she is also currently enrolled and awaiting results of her PhD in Applied Microbiology.

Since 2020, she has published five peer-reviewed articles and two book chapters.

Social Sciences, Humanities, Law
Mr Sandile Ntethelelo Gumbi
Department of Social Sciences
University of KwaZulu-Natal

Mr Sandile Ntethelelo Gumbi is working on a study which is considered groundbreaking in the field of Afrocentric social work. It explores how social work supervision could be Africanised and the possible ways of having Afrocentric social work supervision.

Supervision has been a subject of study for many decades and has been at the centre of social work practice as it exerts its unique significance in the profession. Thus, Mr Gumbi's study is centred on the Afrocentric paradigm and seeks to influence social work policy, practice and education in ushering Afrocentric practices that are coherent with the African context.

He completed his undergraduate degree at the University of Zululand, and his Master's in Social Sciences at the University of KwaZulu-Natal where he is currently a final-year PhD student.

Mr Gumbi has published two articles in peer-reviewed journals. He collaborated with other PhD candidates on an article that is soon to be published by the *Journal for Social Development in Africa*, and currently has four more articles under review at different journals.

Research Excellence Award for Next Generation Researchers

Life Sciences
Mr Edwin Hlangwani
Department of Biotechnology
University of Johannesburg

Mr Edwin Hlangwani has shown the potential to become a leading enthno-microbiologist, specialising in the creation of a nexus between emerging technologies and indigenous knowledge systems to develop, optimise and mobilise sustainable food systems in rural and semi-urban areas.

Rural communities in Southern Africa continue to depend on marula fruit and its beverage products as a staple food source, particularly during times of drought and food scarcity. Thus, his focus is to address research gaps in the marula fruit value chain, with the aim to extend the shelf life of marula fruit products and enhance their commercial viability. His current project pioneers the application of cold-contact fermentation using wild, non-Saccharomyces yeast species.

Mr Hlangwani is a final-year PhD student at the University of Johannesburg where he previously earned a Master's degree (*cum laude*). To date, he has published eight journal articles and three book chapters. His most recent article on the functionalisation of low-alcohol marula fruit beer received the 2024 Plants Travel Award from the journal *Plants* (MDPI, Switzerland). Mr Edwin Hlangwani is the current 2024/25 Chairperson of the IFTSA & Mars Product Development Competition (Institute of Food Technologists, USA).

Physical Sciences
Ms Meladi Lerato Motloutsi
College of Science, Engineering & Technology
University of South Africa

Ms Meladi Lerato Motloutsi graduated from the University of Limpopo in 2017 with a BSc in Chemistry and Biochemistry and a BSc Honours in Chemistry, respectively. She completed her Master's degree at the University of Johannesburg in 2019. She is currently enrolled with the University of South Africa for her PhD in Chemistry which focuses on wastewater recovery through membrane technology.

The aim of her research is to fabricate PES membranes incorporating zwitterion-modified graphene oxide to enhance selectivity and antifouling properties during wastewater remediation. The fabricated membranes were used for treatment of abattoir and sewage wastewater. She currently has two manuscripts under review with a journal accredited by the South African Department of Higher Education and Training.

Her work was presented at the WISA Water Reuse Symposium as well as the IWA Particles Conference, both in 2023. Her project also contributes to the Membrane Science and Technology (MST) Engaged Scholarship programme at Bull-Bull Village in the Blouberg Municipality, Limpopo.

Research Excellence Award for Next Generation Researchers

Engineering
Mr Sancho Nyoni
Centre for Minerals Research
University of Cape Town

Sancho Nyoni's research in mineral processing focuses on water chemistry as it pertains to recycling and closed water circuits in mineral processing plants. This research is considered critical to the regional mining industry as it adapts to operating within a water-scarce environment.

He obtained his BSc (Hon) in Applied Chemistry from the National University of Science and Technology in Zimbabwe and MSc (Eng) in Minerals Processing and Extractive Metallurgy from the University of the Witwatersrand.

He is a member of the Southern African Institute of Mining and Metallurgy (SAIMM); serves on the SAIMM Young Professionals Council (YPC); and is the Editor of the *SAIMM YPC E-Mag.* He has also published two articles in peer-reviewed journals and presented two papers at local and international conferences.

Research Excellence Award for Early Career/Emerging Researchers

Environmental Sciences and Management
Dr Hannes Erasmus
School of Biological Sciences
North-West University

Dr Hannes Erasmus has always been intrigued by how contaminants affect aquatic ecosystems and the biota living in these systems. Since South Africa has several mining activities and mineral extraction processes, the aquatic ecosystems normally in the vicinity of these activities are under threat.

During his career, he focused on the effects of gold mining activities on freshwater systems, the exposure and effects of platinum mining on aquatic ecosystems, and on assessing the exposure and effects of mercury on aquatic ecosystems across South Africa. Since South Africa is considered as one of the top ten emitters of mercury in the world, he continued with a Postdoctoral Research Fellowship at the North-West University, South Africa on how mercury is entering aquatic ecosystems and how this pollutant affects biota on different trophic levels. This research was funded as a Scarce Skills Postdoctoral Fellowship from the NRF for 2022—2023.

Over the last eight years, he has published 15 peer-reviewed articles in high-impact journals including *Science of the Total Environment* and *Parasitology Research*. He also supervised 10 Honours and two Master's students and is currently supervising another four Master's students. Dr Erasmus also received a special appointment as an Associate Professor at the University of Hokkaido (Japan) for four months in 2024.

Chemistry
Associate Professor Usisipho Feleni
Institute for Nanotechnology and Water Sustainability
University of South Africa

Prof Usisipho Feleni is an Associate Professor at the Institute for Nanotechnology and Water Sustainability (iNanoWS). Her research expertise is on electrochemical biosensors, electrocatalysis/ catalysis for monitoring disease biomarkers (pathogens for SARS-CoV-2) and pharmaceutical contaminants in water.

She has published more than 80 papers in the areas of various nanomaterials and their applications in electrochemical sensors, electrocatalysis and photocatalysis. Additionally, she has graduated four MSc students at UNISA and is currently supervising/ co-supervising eight MSc and eight PhD students. Prof Feleni obtained external research grants from TIA, NRF, NRF-SAASTA, TESP, RSC, WiR and University of Michigan STEM-Africa Initiative.

Her recent awards and recognition include: (i) 2024 UNISA's Women in Research Leadership Award; (ii) 2022/2023 TW-Kambule NSTF Award: Emerging Researcher; (iii) 2023 South African Women in Science, Distinguished Young Women Researcher; (iv) Standard Bank Top Women Awards: Top Women Leader in STEM 2023; (v) 2022 Principal's Award for Excellence in Research; and (vi) the University of Michigan African Presidential Scholars (UMAPS) Fellowship 2021/2022. She has made several keynote and guest speaker presentations at national and international universities.

Research Excellence Award for Early Career/Emerging Researchers

Public Health
Dr Mbuzeleni Hlongwa
School of Nursing and Public Health
University of KwaZulu-Natal

Dr Hlongwa is a Senior Research Specialist at the Human Sciences Research Council. His research interests are sexual and reproductive health, social aspects of HIV/AIDS, and health demography. He holds a Master's degree in Demography and Population Studies from the University of the Witwatersrand, and a PhD in Public Health from the University of KwaZulu-Natal.

Dr Hlongwa is an Honorary Lecturer in the discipline of Public Health Medicine at UKZN. He currently serves as an Academic Editor for two international journals, *PLOS Global Public Health* and *BMC Health Services Research*, and is a Guest Editor for the HIV Care Collection in *BMC Health Services Research*. His current research focuses on HIV and AIDS issues at the intersection of community and healthcare settings, including community-based HIV research aimed at improving men's engagement in HIV care.

Dr Hlongwa has received numerous prestigious awards, including the NRF Thuthuka grant; the SAMRC Self-Initiated Research (SIR) grant; the SAMRC National Health Scholars Program Award; the UKZN's College of Health Sciences Scholarship; the 2nd Conference on Public Health in Africa Scholarship; the SA 9th AIDS Conference Scholarship; and the 22nd International Conference on AIDS & STIs in Africa Scholarship. He is an NRF Y-rated researcher with close to 50 publications in peer-reviewed journals.

Physical Sciences
Dr Amanda-Lee Ezra Volmink Manicum
Department of Chemistry
Tshwane University of Technology

Dr Amanda-Lee Manicum is a Lecturer in Inorganic Chemistry at the Tshwane University of Technology. Her research interest involves the design and development of novel drugs for diseases such as cancer and tuberculosis.

She first received an NRF Thuthuka PhD track in 2015 and graduated with her Doctoral degree from the University of the Free State in 2017. Afterwards, she received a Thuthuka post-PhD and NRF Black Academic Advancement Programme Grant.

Dr Manicum was an associate editor for the *South African Journal of Sciences* from 2021 to 2023.

She received the Institutional Award for Emerging Researcher of the Year (Female) in 2021 and the Early Career/Emerging Researcher Award in 2022. She is a Deputy Director of the Centre of Applied Chemistry Research.

To date, she has published 52 peer-reviewed articles and two book chapters and has successfully graduated seven MSc students.

Research Excellence Award for Early Career/Emerging Researchers

Faculty of Arts and Humanities
Associate Professor Sisanda Nkoala
Linguistics Department
University of the Western Cape

Associate Professor Sisanda Nkoala is a Lecturer in Media Studies whose research focuses on critical issues of representation, language diversity, and media rhetoric.

She obtained her Bachelors, Honours, Master's and PhD degrees from the University of Cape Town in the fields of Media Production, Political Communication and Rhetoric. She worked for five years as a radio reporter for the SABC and later lectured in Journalism at the Cape Peninsula University of Technology, where she also worked as a Language and Transformation Co-ordinator. After a short stint at UNISA, she moved to UWC, where she currently lectures.

She has served with a number of organisations, including the Press Council of South Africa, the SA National Editors' Forum, the Film and Publications Board and the SA Communications Association and was appointed to serve as a Trustee of Brand South Africa. Internationally she serves on the leadership structure of the International Association for Media and Communication Research; is the Secretary General of the African Journalism Educators Network; and an association editor of the *Journal of Communication Technology*.

She has garnered a number of accolades over the course of her career, including the NIHSS Award for Digital Humanities for her work towards digitising the Early South African Black Press and the Emerging Women Leader in Higher Education Award from HERS-SA, among others.

Engineering
Dr Boitumelo Ramatsetse
Department of Mechanical and Mechatronic Engineering
Stellenbosch University

Dr Boitumelo Ramatsetse is a researcher whose work focuses on the application of reconfigurable manufacturing systems (RMS) to develop modular, adaptable technological solutions for the mining and machine manufacturing industries. He obtained a BTech in Mechanical Engineering from Tshwane University Technology where he also completed his Master's and PhD. He is a Lecturer at SU and is the youngest serving member of the South African Government's National Planning Commission, chairing its Strategy Task Team.

To date he has successfully filed three patents in South Africa and China. In the last eight years, he has published more than 30 articles in peer-reviewed journals and contributed nine book chapters.

Over the course of his career he has garnered a number of awards including the Intellectual Property Competition in 2020; the SASOL SAE Baja Competition; and the NSTF-South32 TW Kambule Award for Emerging Researcher. He was also named one of the Mail & Guardian's 200 Most Influential Young South Africans.

To date he has supervised four Bachelor, nine Honours; eight Master's and one PhD student to completion.

Research Excellence Award for Early Career/Emerging Researchers

Life Sciences
Professor Mahloro Hope Serepa-Dlamini
Faculty of Science
University of Johannesburg

Prof Mahloro Hope Serepa-Dlamini is currently an Associate Professor and Head of Department: Biotechnology and Food Technology, at the University of Johannesburg. Her research focus is on bacterial endophytes associated with indigenous medicinal plants in South Africa. She holds a PhD in Bacterial Genomics from the University of the Witwatersrand.

She joined UJ in 2016 as a Lecturer and was promoted in 2020 to Senior Lecturer and again in 2022 to Associate Professor. In July 2023, she was appointed Head of Department. She leads the Bacterial Genomics and Biotechnology (BGB) research group, which she established in 2017.

In 2023, she published and described a novel bacterial species, *Bacillus dicomae*, which now forms part of the global Microbiology curriculum. Moreover, this makes Prof Serepa-Dlamini the first and currently the only researcher at UJ to have discovered and described a novel bacterial species.

Since 2016, she has published 34 peer-reviewed articles in Scopus-accredited journals. As contribution towards capacity building, she has successfully supervised to completion four B.Tech, 17 MSc and three PhD students, and two postdoctoral research Fellows. In 2023, she was selected as one of the top five finalists in the Emerging Young Woman Leader category of the inaugural Higher Education Women's Leadership Awards (HEWLA), by the Higher Education Resource Services of South Africa (HERS-SA).

Focussed Research Advancement Award

DUT DURBAN UNIVERSITY OF TECHNOLOGY

Durban University of Technology

UNIVERSITY OF LIMPOPO

University of Limpopo

P Rated Researchers

Information and Computer science
Dr Jan Moolman Buys
School of Information Technology
University of Cape Town

Dr Jan Buys is a Senior Lecturer at the Department of Computer Science at the University of Cape Town. He completed his Doctorate at the University of Oxford and was a postdoctoral researcher at the University of Washington.

His research area is Natural Language Processing (NLP) and machine learning, with a particular focus on text generation and low-resource NLP. His research has developed methods to incorporate linguistic structure into language models and algorithms for generating text from language models. Dr Buys' current research focuses on developing better language models for low-resource South African languages.

Physical Sciences
Dr Itumeleng Matuba Monageng
Faculty of Science
University of Cape Town (Joint position with NRF-SAAO)

Dr Itumeleng Monageng is an astrophysicist currently holding a joint position between the University of Cape Town and the South African Astronomical Observatory (NRF-SAAO). He conducts research on interacting binary stars, where he uses data from telescopes to understand the physical processes taking place in these systems.

Dr Monageng completed his PhD in 2018 after which he briefly joined the Southern African Large Telescope operations team, where he performed service observing for an international research community. He held a post-doctoral position at the NRF-SAAO where he continued his research on interacting stellar systems. Dr Monageng has co-authored 38 publications since 2017 and is currently supervising several postgraduate students.

Dr Monageng has been awarded several prizes, including selection as one of the top 20 young scientists for the prestigious 69th Lindau Nobel Laureate Meetings and the College of Fellows Young Researcher Award.

Public Engagement with Research Award

Social sciences, Humanities: Visual Art
Professor Kim Berman
School of Arts
University of Johannesburg

Prof Kim Berman, a Professor in the Visual Art Department at the Faculty of Art Design and Architecture, has undertaken important and sustained research which has not only reached marginalised communities but also afforded people opportunities to attain livelihoods within the visual arts.

She affects a profound synthesis between her research in her capacity as a Professor of Visual Art at the University of Johannesburg, where she has been employed since 1994, and the various initiatives that she has set up over the years that have – quite literally - transformed people's lives.

She holds a PhD in Art and Cultural Studies from the University of the Witwatersrand.

Executive Director and co-founder of Artist Proof Studio in 1991, Prof Berman created a forum for young people from difficult circumstances to receive training as professional artists. The Studio has trained well over 400 students as professional artists. Prof Berman also founded Phumani Paper, a papermaking initiative which has included 21 poverty alleviation projects in seven provinces in South Africa, creating over 220 jobs for rural women.

Her work goes back to the mid-90s when she developed the National Paper Prayers and HIV/AIDS Awareness campaign that led to thousands of people being trained in HIV/AIDS awareness.

Her book, *Finding Voice: A visual approach to engaging change* (2017) values the notion of voice as key to agency and the responsibility to act. She believes that the arts are a powerful medium to challenge injustice. Her role as an educator embeds the active promotion of creativity, reflexivity, engagement and imagination.

In 2011, Prof Berman collaborated on community enagement initiatives with her students in HaMakuya in Limpopo, an initiative that involved support for 20 families and four schools through Homestays, workshops, and the making of murals. Recent participatory community engagements with students presently include collaborative work with the street reclaimers in the Bekezela community in Newtown. During the COVID-19 Lockdown, she co-founded The Lockdown Collection, an artist-led project that has supported hundreds of vulnerable artists and art students. She is committed to engaging the arts for social change through her activism and teaching, and she has also lectured and exhibited widely in South Africa and internationally.

Since 2016, her research outputs include 14 peer-reviewed articles, four books and 18 book chapters. She has successfully supervised numerous postgraduate students to completion, many of whom proceeded to run projects (aimed at developing livelihoods) or play dynamic roles in arts education.

Champion of Research Capacity Development and Transformation Award

Engineering
Professor Eric van Steen
Department of Chemical Engineering
University of Cape Town

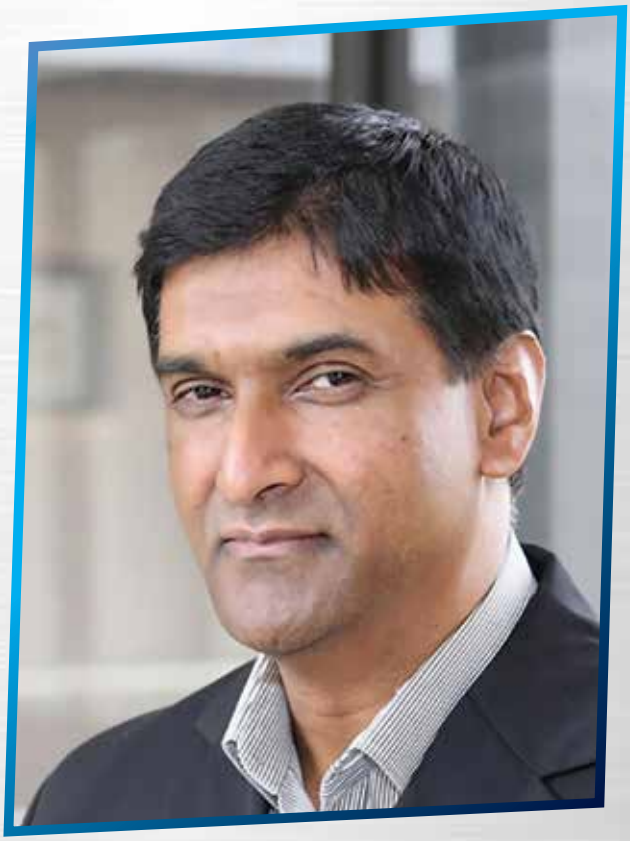
Professor Eric van Steen holds the DSI-NRF South African Research Chair in Reaction Engineering at UCT and was a researcher in the now expired DSI-NRF Centre of Excellence in Catalysis (c*change). His work focuses on COx hydrogenation (both Fischer-Tropsch synthesis and CO2 hydrogenation); selective aerobic oxidation of methane; and water splitting, and he tries to obtain a fundamental understanding of the working of catalysts through the development of model systems such as mixed iron-copper/silver oxides as catalyst precursors; hybrid catalysts; and inverse model catalysts, as well as theoretical models (using Density Functional theory).

Prof van Steen obtained his MSc from the Eindhoven University of Technology in The Netherlands and his Dr-Ing from Karlsruhe University of Technology in Germany. He joined UCT's Department of Chemical Engineering in 1995 as a Senior Lecturer and was promoted to Professor in 2001 and has served from 2002-2007 and 2015-2018 as the Head of Department.

He is popular with the undergraduate students with many choosing to complete their final year research under his tutelage and thus attracts many students for the undergraduate student body. He takes a personal interest in each of his students, in relation to their chosen careers and in ensuring that they overcome any problems in their studies, and holds regular meetings with them to ensure that they are coping at a personal level as well. A number of his students have remained in academia as Senior Lecturers at UCT and elsewhere. He also endeavours to maintain contact with his postgraduates.

Over his 30-year career, Prof van Steen has supervised more than 200 students – 26 PhDs, 47 MScs and more than 135 BSc. He has geared his supervisory role for BSc students to reflect the demographics of the university's undergraduate cohort - 68% Black (African, Coloured, Indian and Chinese) and 32% White with 33% women. His MSc cohort has consisted of 64% Black and 32% White students and 49% women while his PhD cohort consisted of 58% Black and 42% White, with 38% women. He has also supervised three postdoctoral Fellows over the last five years.

Champion of Research Capacity Development and Transformation Award



Social sciences, Humanities

Professor Umesh Ramnarain

Department of Science and Technology Education

University of Johannesburg

Professor Umesh Ramnarain is a Professor in Science Education and the Director of the CALTSTEAM Research Centre in the Department of Science and Technology Education at the University of Johannesburg. His research focuses on inquiry-based learning and its uptake in South African classrooms characterised by diversity and complexity in terms of intrinsic and extrinsic or environmental factors. The knowledge base he has built has important implications at both the national and international levels, especially in terms of inquiry teaching in underprivileged schools.

Prof Ramnarain obtained his BSc in Chemistry and Mathematics as well as a Diploma in Education from the then University of Durban-Westville (now UKZN). He then obtained a Bachelors and Master's of Education from UNISA and completed his PhD at the University of KwaZulu-Natal. He spent 12 years teaching Physical Science and Mathematics at secondary school level and spent two years as the Head of Department in Science/Mathematics at Westville Boys' High School before moving to academia, first as a part-time Lecturer at UKZN and then moving to UJ where he worked as a Lecturer and Professor before being appointed to Head of Department and then Director of the CALTSTEAM Research Centre.

Prof Ramnarain has dedicated himself to the empowerment of students from disadvantaged backgrounds (mainly Black students) in the development of their scholarship. He has maintained a lifelong commitment to transformation through the maintenance of high standards and emphasis on research impact while at the same time recognising the individual challenges faced by his students and building their confidence in the achievement of greatness. His belief is that it is more important for students to engage in research that is socially impactful in addressing contemporary societal problems and not to simply "chase after a certificate". This approach has seen his students produce excellent research and high distinction rates.

He has supervised 14 PhD students, 10 of whom are Black and five of whom are Black women, and 32 Master's students, 28 of whom are Black and 17 Black women.

He is a member of the Academy of Science of South Africa.

Societal Impact Award

DSI-NRF Centre of Excellence for Biomedical TB Research (CBTBR)

Tuberculosis (TB) has claimed more human lives than any other bacterial disease, with inefficient diagnosis adversely affecting morbidity and mortality. The CBTBR's cross-disciplinary research program yielded a series of scientific breakthroughs on the biology of the TB bacillus, from characterisation of the bacterial cell wall to translating how this affects diagnosis. The CBTBR advanced its work for direct patient benefit by developing methods which allow for greater recovery of TB bacteria in patient specimens. These findings were applied to enhance TB diagnosis in people living with HIV or with extra-pulmonary TB. The CBTBR translated research into products that enabled the mass rollout of TB testing in South Africa and globally, supporting the National Department of Health in its rollout.

A critical component of diagnostic testing is ensuring that tests operate optimally, requiring a sample of the disease-causing agent for validation. The lack of control products hampered rollout locally. The CBTBR addressed this problem through the development of a series of products comprised of inactivated TB bacteria and a second-generation series of biomimetic products wherein only the specific TB DNA targets were present in non-pathogenic bacteria, thus mimicking TB bacteria during the validation of diagnostic tests. This novel technology has been expanded to other pathogens, including drug resistant TB, SARS-CoV-2 and HIV. These technologies have allowed patients to be diagnosed and access care.

In terms of Societal Impact, the panel recognised how CBTBR products have enabled hundreds of thousands of patients to access diagnostic tests for drug sensitive TB (46 countries) and drug resistant TB (22 countries). CBTBR also secured endorsement for their products from the World Health Organization and the United States Centers for Disease Control and Prevention (CDC), facilitating their broader use and impact. Furthermore, in 2020, while the South African national testing system struggled with deployment of Covid-19 mass testing, the CBTBR developed the world's first series of biologically safe SARS-CoV-2 biomimetic control products which enabled the immediate rollout of Covid-19 mass testing in South Africa and 30 other countries. The collective effort enabled access to life-saving diagnostics for millions of people.

Societal Impact Award Finalist

DSI-NRF Centre of Excellence for Epidemiological Modelling and Analysis

Since 2006, the South African Centre for Epidemiological Modelling and Analysis (SACEMA) has led epidemiological research, addressing diverse health issues including HIV, TB, vaccine-preventable diseases, emerging infections, and cancer - significantly influencing public health policies in Africa. Together with strategic local and international partners and health organisations, SACEMA integrates quantitative and life sciences to deliver data-driven insights, forecast disease trends, and evaluate public health interventions.

Research and Impact: Key achievements include pioneering HIV incidence estimation methods and characterising the Omicron variant's increased reinfection risk during the COVID-19 pandemic.

Capacity Building: Nearly 200 postgraduate students have obtained degrees in epidemiological modelling or analysis with SACEMA's support. Since 2007, SACEMA has hosted and participated in the International Clinics on Infectious Disease Dynamics and Data (ICI3D) program, training over 700 junior researchers.

Through innovative research, strategic collaborations, and active stakeholder engagement, SACEMA exemplifies the NRF's commitment to advancing research with impactful societal benefits.

DSI-NRF Centre of Excellence in Human Development

The DSI-NRF Centre of Excellence in Human Development is a virtual academic centre that provides the resources to enable researchers to collaborate cross disciplines and institutions on long-term projects. The three main research areas in which the Centre of Excellence in Human Development supports and grows excellence are: Life-course development describes the development of individuals from conception to death, including multi-disciplinary studies of child, adolescent and adult development.

Inter-generational development describes the life cycle from one generation to the next, and includes studies of families and parental influence, both social and biological.

Socio-ecological and transformational development represents the interdependencies between societies, societal members and their natural environment. It includes a transdisciplinary mode of research where economic growth can be reconciled with social and environmental objectives.

In several areas, researchers in the CoE-HUMAN have made novel contributions to the global, regional and local repository of knowledge, with important impacts on policy.

Science Team Award

Health Sciences

African Brain Child Team

The Neuroscience Institute

University of Cape Town

The African Brain Child (ABC) group combines neuroscience research and clinical interventions to address the high burden of conditions that cause acute brain injury in children. Traumatic brain injury, meningitis, brain tumours, epilepsy and hydrocephalus are some of the conditions that often lead to poor health outcomes for children, collectively accounting for the largest global burden of premature deaths and long-term disabilities. These conditions are poorly understood because it is difficult to study the brain. It is for this reason that the ABC Team was developed from its origins in a neurosurgery program by Prof Anthony Figaji, who is also the NRF SARChI Chair of Clinical Neurosciences. They work to address the research gap in brain conditions that are often sorely neglected in science and healthcare policies. Their overall aim is to use a science-led approach to make a meaningful difference in the lives of children.

ABC is based at the Red Cross Children's Hospital in Cape Town and the Neuroscience Institute at UCT. They have developed a sophisticated, technology-based, clinical infrastructure for patient care and have the world's largest experience of advanced brain monitoring in children, resulting in work that has influenced international treatment protocols. They also developed an African-first neuroscience biobank of brain tissue, pathology tissue, brain interstitial fluid, and ventricular cerebrospinal fluid. Their interests span brain physiology, inflammation, metabolism, genomics, and pharmacokinetics, and they collaborate widely with different disciplines, believing that this is key to unravelling the complexity of the brain.

ABC also believes in social impact and advocacy for patients and learners: they run a prevention program to reduce head injuries on South African roads and host an annual International Brain Awareness Week program for learners from disadvantaged schools to inspire the next generation of neuroscientists. Recently, they were awarded the prestigious Discovery grant from the Wellcome Trust, the first time it has been awarded to a South African investigator.

The team consists of Prof Anthony Figaji (Director), A/Professor Ursula Rohlwink, A/Professor Nico Enslin, Dr Nqobile Thango, Dr Jill Combrinck, Ms Lisa Rae Ungerer, Ms Devin van de Laar, Dr Yigael Powrie, Ms Kelly Kordom, Sr Rachel Dielle, Sr Khanyisa Ginxana, Sr Nombuso Opendun, and many postgraduate students.

A Rated Researchers
A-RATED FOR THE 1ST TIME

Health Sciences
Professor Edward Sturrock
Department of Integrative Biomedical Sciences
University of Cape Town

Prof Edward Sturrock's research interests include structure-function aspects of the angiotensin-converting enzyme (ACE); structure-based design of novel ACE and vasopeptidase inhibitors, and the mechanisms involved in fibrosing TB pericarditis.

He has been associated with the University of Cape Town (UCT) for most of his career where he is currently a Full Professor. After completing his PhD at UCT he took a postdoctoral Fellowship at Harvard Medical School where he started his research on ACE, a protein that plays a key role in blood pressure regulation.

In 2003 he was awarded a Wellcome Trust International Senior Research Fellowship for his work on the development of new domain-selective inhibitors of ACE. After this, his research focus shifted toward the design of novel ACE inhibitors that are likely to be more effective for the treatment of hypertension.

He has made significant contributions to the national and international scientific communities. He is a Fellow of the Royal Society of South Africa; a member of the Academy of Science of South Africa; and served on the council of the International Proteolysis Society.

To date, he has published 129 papers in peer-reviewed international journals and filed six patents (four of which have been granted in five regions).

Media Studies
Professor Herman Wasserman
Department of Journalism
Stellenbosch University

Herman Wasserman is Professor and Chair of the Department of Journalism at Stellenbosch University, and a former newspaper journalist. His 17 books include Tabloid Journalism in South Africa; Media, Geopolitics; Power Media, Conflict and Democracy in Africa, and Disinformation in the Global South. He is a Fellow and Board Member of the International Communication Association and member of the Academy of Science of South Africa.

His awards include the Georg Foster Prize from the Alexander von Humboldt Foundation (Germany), the Neva Prize (St Petersburg State University), a Fulbright Fellowship (USA) and the Stals Prize for Communication Science (Akademie vir Wetenskap en Kuns).

He has been a visiting professor at the universities of Groningen, Utrecht, Houston, Ludwig-Maximilians Universität and Tsinghua.

He is Editor-in-Chief of the Annals of the International Communication Association and African Journalism Studies, and Associate Editor of International Communication Gazette. He holds an A-rating from the National Research Foundation.

A Rated Researchers
A-RATED FOR THE 2ND TIME

Medical sciences
(Epidemiology, diagnosis, and transmission of TB)
Professor Keertan Dheda
Division of Pulmonology
University of Cape Town

Professor Keertan Dheda is currently Head of the Division of Pulmonology at the University of Cape Town; Director of the Centre for Lung Infection and Immunity at UCT; and Professor of Mycobacteriology and Global Health at the London School of Hygiene and Tropical Medicine. He obtained his degrees from the University of the Witwatersrand and University College London (PhD).

His research work has focussed on the pathogenesis, diagnosis and management of respiratory infections including TB. He serves or has served on several international academic and advisory bodies including those of the WHO, NIH, Wellcome Trust, and the editorial boards of the *American Journal of Respiratory and Critical Care Medicine*, *Lancet Respiratory Medicine*, and the *British Medical Journal*. He has published over 380 peer-reviewed manuscripts (H index of 103) and is a co-inventor on six patents related to diagnostics and vaccines. A total of 32 of his original first or senior author publications are citation classics (papers cited at least 100 times).

His work has been acknowledged through a number of global and local awards including the International Union TB and Lung Disease Award; European Union Scientific Leadership Award; the South African MRC Platinum Lifetime Award; and the Oppenheimer Award.

Physical Sciences
Professor Andrew Forbes
School of Physics
University Witwatersrand

Prof Andrew Forbes has at various times in his career found himself as teacher, janitor, secretary, receptionist, web-master, systems engineer, sales rep, manager, director, and sometimes a scientist. Andrew is presently a Distinguished Professor within the School of Physics at the U. Witwatersrand (South Africa) where in 2015 he established a new laboratory for Structured Light.

Prof Forbes is active in promoting photonics in Africa, a founding member of the Photonics Initiative of South Africa and Director of South Africa's Quantum Roadmap. He is a Fellow of SPIE, Optica, the South African Institute of Physics (SAIP), and an elected member of the Academy of Science of South Africa.

He holds four honorary professorships, is editor-in-chief of the IoP's *Journal of Optics* and sits on the editorial board of five other international journals. He has won several awards, including the NSTF national award for his contributions to photonics in South Africa, the Georg Forster prize from the Alexander von Humboldt Foundation for outstanding contributions to photonics, the SAIP Gold Medal, the highest award for physics in South Africa, making him the youngest winner to date, the Sang Soo Lee award from Optica and the Korean Optical Society and the TWAS Prize for Physics. Prof Forbes spends his time having fun with the taxpayers' money, exploring structured light in lasers as well as classical and quantum optics.

A Rated Researchers
A-RATED FOR THE 2ND TIME

Social Sciences (Mixed Methods Research)
Professor Anthony Onwuegbuzie
Faculty of Education
University of Johannesburg

Anthony J. Onwuegbuzie is a multiple award-winning author, researcher, methodologist, scholar, educator, thought leader, and mentor. Currently, he is a Distinguished Visiting Professor at the University of Johannesburg. With an h-index of 113 and more than 115 000 citations, he has published more than 550 works, including more than 450 journal articles, 20 handbook chapters, 55 book chapters, and six books. He has delivered more than 1 000 presentations, 250 methodological workshops, and 70 keynote addresses worldwide.

Currently, he is editor-in-chief of the *International Journal of Multiple Research Approaches* and *Journal of Mixed Methods Studies*. He is past President of the Mixed Methods International Research Association.

He received the 2024 National Research Foundation "A" rating in the science and research field. Among numerous awards, he received the 2024 Research Excellence Distinction Award: International Academic Awards.

Professor Onwuegbuzie is the most cited Educational Research Scientist in the world over the last six years.

Theological Ethics (Black Theology)
Professor Anthony Reddie
School of Humanities
University of South Africa (University of Oxford)

Professor Anthony G. Reddie is the Professor of Black Theology in the University of Oxford. He is also the Director of the Oxford Centre for Religion and Culture in Regent's Park College, in the University of Oxford. He is also an Extraordinary Professor of Theological Ethics and a Research Fellow with the University of South Africa.

He is the first Black academic to get an 'A' rating in Theology and Religious studies from the South African National Research Foundation. This designation means that he is a leading international researcher. He is the Editor of *Black Theology: An International Journal*.

He is a recipient of the Archbishop of Canterbury's 2020 Lambeth, Lanfranc Award for Education and Scholarship, given for 'exceptional and sustained contribution to Black Theology in Britain and Beyond'.

He is a member of the Archbishops Commission for Racial Justice in the Church of England. In September 2023, Anthony Reddie was appointed as the first ever Professor of Black Theology at the University of Oxford, the first appointment of its kind in 900 years.

A Rated Researchers
A-RATED FOR THE 3RD TIME

Medical Sciences (Care of children and HIV medicine)
Professor Glenda Gray
Faculty of Health Sciences
University of the Witwatersrand

Professor Glenda Gray, a medical doctor and pediatrician, is the past President of the South African Medical Research Council. She is now a Distinguished Professor in the Faculty of Health Sciences at the University of the Witwatersrand and Professor at the Vaccines and Infectious Disease Division of the Fred Hutchinson Cancer Research Centre.

She is the Co-PI of the international NIH-funded HIV Vaccines Clinical Trials Network and leads the BRILLIANT Consortium, focused on HIV vaccine discovery and development in Africa. She is the Chair of the Board of the Global Antibiotic R&D Partnership; serves as a Board member of the National Research Foundation; and is a member of the UCT Council. She is a member of the Academy of Science of South Africa, the African Academy of Sciences, the World Academy of Sciences, and the US National Academy of Medicine.

She received South Africa's highest honour, the Order of Mapungubwe the Nelson Mandela Health and Human Rights Award for her pioneering research in preventing paediatric HIV. She has been named as one of Time's 100 Most Influential People in the World and Forbes top 50 Women in Africa in recognition of her research in HIV. She received DSc (*honoris causa*, Simon Fraser University), DSc (*honoris causa*, Stellenbosch University), and LLD (*honoris causa*, Rhodes University).

Physical Sciences
Professor Roy Maartens
SKA Research Chair in Astronomy and Astrophysics
University of the Western Cape

Professor Maartens obtained his PhD from UCT in 1980 and was a Lecturer at the University of the Witwatersrand from 1984-94. He joined the University of Portsmouth in the UK where he was the founding Director of the Institute of Cosmology & Gravitation, which became one of the top cosmology research groups in the UK and internationally. From 2002 to 2005 he held a National Senior Research Fellowship from the UK Particle Physics & Astronomy Research Council. He returned to South Africa in 2011 to take up a SARChI Research Chair at UWC, one of five national Chairs that are affiliated to the South African SKA (Square Kilometre Array) Project.

He built an Astrophysics Group in the Department of Physics, now the Department of Physics & Astronomy. The Group now has six academic research staff and more than 30 researchers at postdoctoral, PhD and MSc levels. In 2012, he received his first NRF A-rating for his research in Cosmology, which was also the first A-rating at UWC. It was renewed in 2018 and again in 2024. In 2019 he was elected a Fellow of the International Society for General Relativity & Gravitation.

His research focuses on extracting information from the distribution of millions of galaxies, which contain a 'fossil' record from the very early Universe, as well as the imprints at later times of Dark Energy and Dark Matter. This information is used to study the origins and evolution of the Universe. He has published more than 250 articles in international peer-reviewed journals, with an h-index of 75.

A Rated Researchers
A-RATED FOR THE 3RD TIME

Biological Sciences
Professor Edward Rybicki
Biopharming Research Unit
University of Cape Town

Prof Edward Rybicki trained plant virologist – BSc, Honours, Master's and PhD degrees all from the University of Cape Town, with MSc and PhD in plant virology – he changed field in the 1990s due to funding for plant virus work drying up in South Africa.

Part of the reason for the change to working on animal and human viruses (beak and feather disease virus of parrots, and HPVs and HIV) was his getting married to Anna-Lise Williamson in 1988, who said "Why don't you work on something useful?" when he was looking for what to do with himself.

Work on detection and genetic characterisation of HPV, HIV and other viruses led to working on vaccines for human papillomaviruses (HPV) and HIV in the late 1990s, and vaccinology became his research area until the present day.

Medical sciences
Professor H. Simon Schaaf
Department of Paediatrics and Child Health
Stellenbosch University

Professor H. Simon Schaaf is a pioneer researcher in multidrug-resistant tuberculosis and his work has helped to broaden the understanding and management of the disease, particularly in children. His research covers a range of areas including TB drug resistance surveillance, pharmacokinetics of antituberculosis drugs in children, HIV/TB co-infection, childhood TB diagnosis, TB meningitis, and developing new treatment strategies, both for treatment and prevention of drug-resistant TB in children.

Prof Schaaf, a paediatrician and infectious diseases specialist, completed his Doctoral studies on Drug-resistant tuberculosis in children at Stellenbosch University. He is currently Emeritus Professor and Principal Researcher at the Desmond Tutu TB Centre, Department of Paediatrics and Child Health, Stellenbosch University.

He has published and co-published more than 350 peer-reviewed articles in various international journals, published more than 30 book chapters, and has edited two books. He has consulted for many organisations including the World Health Organisation, US Centers for Disease Control and Prevention, European CDC, and the National Clinical Advisory Committee for Drug-resistant TB in South Africa. He is Honorary Member of the International Union Against Tuberculosis and Lung Disease and received the Order of Mapungubwe (silver) for his contribution to the field of medical sciences from the President of South Africa.

A Rated Researchers
A-RATED FOR THE 3RD TIME

Health
Professor Heather Zar
Department of Paediatrics and Child Health
University of Cape Town

Heather Zar is Professor & Chair, Department of Paediatrics and Child Health and Director of the SAMRC Unit on Child & Adolescent Health, University of Cape Town. A global expert in childhood respiratory diseases, she's built a strong clinical translational research program in some of the most deprived communities, with a strong focus on childhood pneumonia. She established an African birth cohort enabling study of the epidemiology, determinants and long term impact of early life exposures including pneumonia. She has participated in several studies of Respiratory syncytial virus (RSV) prevention in infants.

She chaired the WHO Technical Advisory committee on new RSV preventive interventions. She is the past-President of the Forum of International Respiratory Societies, of the Pan African Thoracic Society, and serves as an advisor to WHO, UNICEF and the Gates Foundation.

She received the World Lung Health award from the American Thoracic Society, the L'Oréal-UNESCO for Women in Science Laureate for Africa and Arabia, the SA-MRC Platinum medal for contributions over a lifetime, the European Respiratory Society Lifetime Achievement Award and the Barney Graham award for contributions on RSV. She is passionate about reducing global health inequities and ensuring access to effective interventions for all children.

A Rated Researchers
A-RATED FOR THE 4TH TIME

Social Sciences (Mathematics Education)
Professor Jill Adler
School of Education
University of the Witwatersrand

Professor Jillian Adler's recent research addresses the substantive research question of whether and how a professional development intervention with mathematics teachers could impact the quality of teaching and learning in previously disadvantaged secondary schools. As a Professor of Mathematics Education and a past Chairholder of the SARChI Chair in Mathematics Education (2010-2019) at the University of Witwatersrand, her pioneering research over three decades has made a positive impact, particularly her work on language diversity and resources in mathematics classrooms.

Prof Adler obtained her BSc (Mathematics), Master's (Adult Education) and PhD (Mathematics Education) degrees from WITS as well and a Secondary Teaching Diploma from UCT. She began her career as a secondary school mathematics teachers, and following her Master's she took up an academic position at WITS and has held mathematics education Chairs and professorships both locally and internationally.

Since 2015, she has published over 25 articles in refereed/peer-reviewed journals, one book and numerous book chapters. She was President of the International Commission on Mathematics Instruction (ICMI) 2017-2020. Her accolades in this period include the ICMI 2015 Hans Freudenthal Medal, and the 2023 NRF Lifetime Achievers Award.

Lifetime Achievement Award

Natural Sciences
Professor Richard Cowling
School of Botany
Stellenbosch University

In an academic career spanning some 40 years, Professor Richard Cowling has aspired to contribute to both curiosity and applied research while at the same time remaining steadfastly engaged in research implementation and community outreach. In doing so, he and his team have conducted research on plant diversity and evolution, conservation science, restoration ecology and palaeoecology. His social engagement has influenced conservation practice and policy in South Africa, especially in the fields of sustainable land use planning, protected area expansion and restoration of degraded ecosystems. Actions arising from these policy shifts have underpinned substantive employment benefits in the growing biodiversity economy.

He obtained his BSc in Botany from the University of Cape Town where he also completed his Honours and PhD. He completed a postdoctoral Fellowship at Curtin University in Australia before moving to the University of Port Elizabeth (now Nelson Mandela University) to take up a post as Senior Research Associate. He later worked as a scientific co-ordinator for the CSIR before he joined UCT as a Lecturer and then Associate Professor in Botany. He was also the Leslie Hill Professor

of Plant Conservation and Director of the Leslie Hill Institute for Plant Conservation at UCT. He is currently a Distinguished Professor and Research Professor at NMU, and an Honorary Professor in Botany at UCT.

Over the last 36 years, Prof Cowling served on 64 committees in his capacity as an academic and scientist. In 13 of these committees, he played a leadership role. Almost all of this committee work has related to his applied research in conservation and restoration, and most has been at a regional or national level. However, 12 of these committees have been global in scope and involved service to organisations such as Conservation International, the World Wide Fund for Nature, IUCN and the World Bank.

He was amongst a group of scientists who persuaded politicians post the 1994 democratic elections to invest in the removal of invasive alien plants to secure key ecosystem services (mainly water) and create large numbers of jobs for unskilled workers. This led to the globally renowned Working for Water programme which, by 2020, had cleared 2.7 million ha of invaded land while creating the equivalent of 180 000 full-time jobs.

His work has resulted in the establishment of numerous conservation areas which have included 330 ha of critically endangered coastal dune habitat around Cape St Francis. Through the Leslie Hill Succulent Karoo Trust, which he established to secure the conservation of priority regions in the poorly conserved Succulent Karoo biome, the Knersvlakte Nature Reserve was expanded to 125 000 ha and the Namaqua National Park was expanded from 1 000 ha to 140 000 ha. He also played a key role in the proclamation of the Agulhas and Table Mountain National Parks in the late 1990s.

Prof Cowling's contributions to science have received both local and international acclaim. He was awarded a Gold Medal from the South African Association for the Advancement of Science in 2009 and from the South African Association of Botanists in 2014. He also won the Marloth Medal from the Royal Society of South Africa and the Science for Society Award from the Academy of Science of South Africa.

He was elected a Foreign Member of the National Academy of Sciences in the USA in 2008 and, in 2012, was elected a Fellow of the Ecological Society of America. ISIHighlyCited.com recognised him as among the 250 most-cited researchers in Ecology and Environment between 1981 and 2005, and he received a Distinguished Service Award from the USA's Society for Conservation Biology.

His more than 430 peer-reviewed articles have appeared in high leading journals such as *Nature, Science*, and the *Proceedings of the National Academy of Science*. Of those articles, 56 have been cited more than 200 times. His Google Scholar h-index, as of mid-March 2024, was 115, based on 44 098 citations. He has also authored/co-authored three popular books on Fynbos, the winter-rainfall Succulent Karoo, and Subtropical Thicket biomes of the Cape Floristic Region.

Over the course of his career he has supervised 83 postgraduate and postdoctoral students.

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